CLAIM AMENDMENTS

Claim Amendment Summary

Claims pending

- Before this Amendment: Claims 1-12
- After this Amendment: Claims 1-12 and 24-27

Non-Elected, Canceled, or Withdrawn claims: None

Amended claims: 2

New claims: 24-27

Claims:

1. (Previously Presented) A mode-switching transformer comprising a first line in common mode and a second line in differential mode, each line comprising two sections in series respectively coupled with one of the two sections of the other line and all sections having the same lengths, wherein the common mode line is connected in series with a capacitor, to lower a central frequency of a bandwidth of the transformer, the $\lambda/4$ lengths of the sections being chosen to correspond to a central frequency greater than a desired central frequency for the transformer.

2. (Currently Amended) ~~The transformer of claim 1~~, A mode-switching transformer comprising a first line in common mode and a second line in differential mode, each line comprising two sections in series respectively coupled with one of the two sections of the other line and all sections having the same lengths, wherein the common mode line is connected in series with a capacitor, to lower a central frequency of a bandwidth of the transformer, the $\lambda/4$ lengths of the sections being chosen to correspond to a central frequency greater than a desired central frequency for the transformer;

wherein the value of capacitor C respects the following relation:

$$C = \frac{1}{2\pi f_0 Z_c \, tg(\beta L)},$$

where f_0 designates the desired central frequency , where L designates the length of the two sections in series calculated in $\lambda/2$ from said central frequency greater than the desired central frequency, where Z_C designates the characteristic line impedance, and where β designates the phase constant.

3. (Previously Presented) The transformer of claim 1, in which each section is a plane spiral, two first sections being formed in a first conductive layer of a multilayer circuit and being laterally spaced from each other, the two other sections being also formed in said first conductive layer and being respectively interlaced with the first sections, at least one armature of the capacitor being formed in said first conductive layer and connections being formed in a second conductive layer, the two conductive layers separated by a dielectric.

4. (Previously Presented) The transformer of claim 3, in which the capacitor is located in the center of the spirals of the first sections.

5. (Previously Presented) The transformer of claim 1, formed in two conductive levels separated by a dielectric, two sections and one armature of the capacitor being patterned in each conductive level.

6. (Original) The transformer of claim 1, wherein the transformer is applied to frequencies on the order of one gigahertz.

7. (Previously Presented) A mode-switching transformer, comprising:

a common mode winding;

a differential mode winding electromagnetically coupled with the common mode winding; and

only one capacitor electrically coupled to the common-mode winding.

8. (Original) The mode-switching transformer of claim 7 wherein the common mode winding comprises two sections and the differential mode winding comprises two sections, each section having an equal length.

9. (Original) The mode-switching transformer of claim 7 wherein a central frequency of the transformer is in the gigahertz frequency range.

10. (Original) The mode-switching transformer of claim 8 wherein the length of each section of each winding is equivalent to a quarter of the length of a first frequency, wherein the first frequency is greater than a central frequency of the transformer.

11. (Original) The mode-switching transformer of claim 7 wherein the common mode winding is formed within a first metallization layer and the differential mode winding is formed within a second metallization layer, the two metallization layers separated by a dielectric.

12. (Previously Presented) The mode-switching transformer of claim 7 wherein the capacitor comprises a first armature disposed in a first metallization layer and a second armature disposed in a second metallization layer, the two metallization layers separated by a dielectric.

13. – 23. (Canceled)

24. (New) A mode-switching transformer, comprising:

a common mode winding;

a differential mode winding electromagnetically coupled with the common mode winding defining a central frequency; and

only one capacitor electrically coupled to the common-mode winding,

wherein the value of the capacitor is inversely proportional to the central frequency.

25. (New) The mode-switching transformer of claim 24 wherein the differential mode windings comprise a length and the value of the capacitor is inversely proportional to the length.

26. (New) The mode-switching transformer of claim 24 wherein the differential mode windings comprise an impedance and the value of the capacitor is inversely proportional to the impedance.

27. (New) The mode-switching transformer of claim 24 wherein the differential mode windings comprise a phase constant and the value of the capacitor is inversely proportional to the phase constant.